AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method [[for]] of controlling a photoresist layer above a substrate comprising:

forming, exposing, and developing the photoresist layer, forming at least one opening having a first dimension;

exposing the photoresist layer with the at least one opening to modify the photoresist layer characteristics after developing the photoresist layer; and

heating the photoresist layer with the at least one opening, after [[exposure]] exposing the photoresist layer with the at least one opening, to achieve a thermal reflow of the photoresist layer with the at least one opening to modify the dimension of the at least one opening in the photoresist layer.

2. (Original) The method of claim 1 wherein exposing the photoresist layer with the at least one opening causes a mitigation of bulk expansion of the photoresist layer during reflow.

3. (Currently Amended) The method of claim 1 wherein exposing the photoresist layer with the at least one opening is selected from the group consisting of exposing to photons, exposing to electrons, [[or]] and exposing to ions.

4. (Currently Amended) The method of claim 1 wherein heating the photoresist layer with the at least one opening to achieve a thermal reflow controls [[the]] formation of a critical dimension that is less [[then the]] than a resolution of a lithographic tool set.

5. (Currently Amended) The method of claim 1 wherein heating the photoresist layer with the at least one opening to achieve a thermal reflow controls [[the]] formation of a critical dimension that is less [[then the]] than a fundamental resolution of the photoresist layer.

6. (Currently Amended) The method of claim 1 wherein [[controlling the]] heating [[of]] the photoresist layer to modify the dimension of the at least one opening in the photoresist layer decreases the dimension of the opening in the photoresist layer.

7. (Currently Amended) A method [[for]] of controlling a photoresist layer above a substrate comprising:

forming, exposing, and developing the photoresist layer, forming at least one opening having a first dimension;

exposing the photoresist layer with the at least one opening to an electron beam causing a [[mitigation]] reduction of bulk expansion of the photoresist layer during a subsequent reflow; and

heating the photoresist layer with the at least one opening, after [[exposure]] exposing the photoresist layer with the at least one opening, to achieve a thermal reflow of the photoresist layer to decrease the first dimension of the at least one opening in the photoresist layer.

8. (Currently Amended) The method of claim 7 wherein the electron beam is generated using an electron beam exposure device, implemented at 1.5K to 2.5K electron volts, for between 20 to 40 seconds [[ElectronVision ECA3C]].

9. (Currently Amended) The method of claim 7 wherein the photoresist layer with the at least one opening is exposed to the electron beam at 1.5K to 2.5K electron volts, with a density of about 2,000 micro-Coulombs per square centimeter, for between 20 to 40 seconds.

10. (Currently Amended) The method of claim 7 wherein exposing the photoresist layer with the at least one opening to the electron beam modifies at least one [[of the]] photoresist layer [[characteristics]] characteristic selected from the group consisting of [[the]] a cross linking characteristic, [[the]] a glass transition temperature, [[the]] a decomposition temperature, [[the]] and a molecular weight.

11. (Currently Amended) The process of claim 7 wherein [[controlling the]] heating controls the formation of a photoresist layer critical dimension.

12. (Currently Amended) The process of claim 7 wherein [[controlling]] the heating is performed at 125 to 180 degrees Centigrade for 60 to 90 seconds.

13. (Currently Amended) A method [[for]] of controlling a photoresist layer above a substrate comprising:

forming, exposing, and developing the photoresist layer, forming at least one opening having a first dimension;

exposing the photoresist layer with the at least one opening to a light source causing a [[mitigation]] reduction of bulk expansion of the photoresist layer during a subsequent reflow; and

heating the photoresist layer with the at least one opening, after [[exposure]] exposing the photoresist layer with the at least one opening, to achieve a thermal reflow of the photoresist layer to decrease the first dimension of the at least one opening in the photoresist layer.

14. (Currently Amended) The method of claim 13 wherein the photoresist layer formed on the [[underlying]] substrate is 193nm in thickness.

15. (Original) The method of claim 13 wherein the photoresist layer formed on the underlying substrate is 248nm in thickness.

16. (Currently Amended) The method of claim 13 wherein the light source [[is]] comprises a flash-lamp.

17. (Currently Amended) The method of claim 16 [[wherein the light source is generated using [manufacturer/product name of machine(s)]]] wherein exposure conditions used to expose the photoresist layer with the at least one opening are kept below a solvation-switch deprotection threshold.

18. (Original) The method of claim 16 wherein the light source has a wavelength of 193nm.

19. (Original) The method of claim 18 wherein the light source subjects the photoresist layer with the at least one opening to approximately 4 to 6 mJoules per square centimeter for approximately 30 seconds.

20. (Original) The method of claim 16 wherein the light source has a wavelength of 248nm.

21. (Original) The method of claim 20 wherein the light source subjects the photoresist layer with the at least one opening to approximately 10mJoules per square centimeter for approximately 30 seconds.

22. (Currently Amended) The method of claim 13 wherein exposing the photoresist layer with the at least one opening to [[a]] the light source modifies at least one [[of the]] photoresist layer [[characteristics]] characteristic selected from the group consisting of [[the]] a cross linking characteristic, [[the]] a glass transition temperature, [[the]] a decomposition temperature, [[the]] and a molecular weight.

23. (Currently Amended) The [[process]] method of claim 13 wherein [[controlling the]] heating controls [[the]] formation of a photoresist layer critical dimension.

24. (Currently Amended) The [[process]] method of claim 13 wherein [[controlling the]] heating is performed at [[performed at]] 125 to 180 degrees Centigrade for 60 to 90 seconds.

25. (Currently Amended) A substrate having an etched feature [[having been]] formed by a process comprising:

forming, exposing, and developing a photoresist layer above a substrate, forming at least one opening having a first dimension;

exposing the photoresist layer with the at least one opening to modify the photoresist layer characteristics after developing the photoresist layer;

heating the photoresist layer with the at least one opening, after [[exposure]] exposing the photoresist layer with the at least one opening, to achieve a thermal reflow of the photoresist layer to decrease the first dimension of the at least one opening in the photoresist layer; and

etching the photoresist layer with the at least one opening to form [[develop an integrated circuit]] the etched feature.

26. (Currently Amended) The [[method]] substrate of claim 25 wherein heating comprises heating to or beyond a glass transition temperature of the photresist layer with the at least one opening [[the process further comprises etching the photoresist layer with the at least one opening after controlling the heating to modify the dimension of the at least one opening in the photoresist layer]].

27. (Currently Amended) The [[method]] substrate of claim 25 wherein exposing the photoresist layer with the at least one opening is selected from the group consisting of exposing to photons, exposing to electrons, [[or]] and exposing to ions.

28. (Currently Amended) The [[method]] substrate of claim 27 wherein the exposing to photons is a light source having a wavelength of 193nm.

29. (Currently Amended) The [[method]] substrate of claim 27 wherein the exposing to photons is a light source having a wavelength of 248nm.

30. (Currently Amended) The [[method]] substrate of claim 25 wherein heating the photoresist layer with the at least one opening to achieve [[a]] the thermal reflow controls [[the]] formation of a critical dimension that is less [[then the]] than a resolution of a lithographic tool set.

31. (Currently Amended) The [[method]] substrate of claim 25 wherein heating the photoresist layer with the at least one opening to achieve [[a]] the thermal reflow controls [[the]] formation of a critical dimension that is less [[then the]] than a fundamental resolution of the photoresist layer.